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April 14, 1993

VIA HAND DELIVERY

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Alcatel Network Systems, Inc.
ET Docket No. 92-9

Dear Ms. Searcy:

Pursuant to Section 1.1206 of the Commission's Rules, Alcatel Network Systems, Inc. ("ANS") hereby reports that it held meetings, on April 13, 1993, with the Commission staff on the enclosed list.

The enclosed presentation was distributed to the attendees and accurately reflects what was discussed at the meeting. All the information and comments included in this document previously have been submitted in the record of this proceeding.

Should there be any questions concerning this matter, kindly contact the undersigned.

Sincerely,



Robert J. Miller
RJM/mfg
Encs.

cc: FCC Staff on attached list(w/o encs.)

GW03/142111

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ALCATEL NETWORK SYSTEMS, INC.
APRIL 13, 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

ATTENDEES

FCC

Thomas P. Stanley, Chief Engineer, OET
Bruce A. Franca, Deputy Chief Engineer, OET
David R. Siddall, Chief, Frequency Allocation Branch, OET
Rodney Small, OET
Fred Thomas, OET
Paul Marrangoni, OET
Ron Netro, Engineering Assistant to the Chief, Private Radio Bureau
and staff
Robert James, Chief, Domestic Radio Branch, Common Carrier Bureau

GW03/141606



Channel Plan for Relocating 2 GHz Fixed Microwave Users to Bands Above 3 GHz

ET Docket No. 92-9

**Alcatel Network Systems, Inc.
Technical Staff**

Why are we here?

To Discuss Rechannelization of Higher Frequency Bands

Issue:

**Which Channel Plan Should the FCC
Adopt?**

1.6 MHz Based (FCC/Alcatel)

2.5 MHz Based (TIA/Joint Commenters)

ALCATEL

NETWORK SYSTEMS

Summary of Industry Comments

These companies support
channel bandwidths of:

5.0 MHz	12 DS1
3.2 MHz	8 DS1
1.6 MHz	4 DS1
800 kHz	2 DS1
400 kHz	1 DS1

Alcatel
AT&T
MCI
Comsearch
Western Multiplex
Burlington Northern
Colorado Interstate Gas

(1) Bandwidths from the
FCC/Alcatel Plan

These companies support
channel bandwidths of:

5.0 MHz	12 DS1
3.75 MHz	8 DS1
2.5 MHz	4 DS1
1.25 MHz	2 DS1

Harris-Farinon
Telesciences
Digital Microwave Corp.
Northern Telecom
Comsearch
TIA

(2) Bandwidths from the TIA/
Joint Commenters Plan



Selection of Channel Plan Should Be Based Upon These Public Interest Goals:

**Which solution is the
better long term
strategy?**

- Since 1954, a major microwave radio manufacturer and supplier
- From 1951 to 1973, Collins Radio Company
- From 1973 to 1991, Network Transmissions Systems Division of Rockwell International
- Since Fall 1991, Alcatel Network Systems, Inc., a Delaware corporation
 - no change in management and staff



Alcatel - - Born in the USA

Alcatel Microwave:

Products Designed in the USA

Products Manufactured in the USA

**Products Sold to USA, Canada,
Mexico, Taiwan, South Korea,
Egypt, Philippines, Hong Kong,
Saudi Arabia**



Alcatel - - Active in the USA

Alcatel Personnel Have a Long History as Active Industry Participants

Telecommunication Industry Association

National Spectrum Managers Association

IEEE Power Engineering Society

Telecommunication Standards Committee

- January 1992 - FCC NPRM ET Docket No. 92-9
- May 1992 - UTC and Alcatel petitioned for technical changes to Parts 21 and 94 for relocated 2 GHz microwave users
 - General industry support
- June 1992 - UTC and Alcatel petitions placed on Public Notice for industry comments
 - General industry support
- July 1992 - Reply comments received
 - General industry support

- **August 1992 - Petitions adopted in FNPRM**
- **November 1992 - TIA requested last minute extension to file comments on FNPRM**
- **December 1992 - Comments on FNPRM received**
 - **TIA and Harris (with Joint Commenters) reverse position**
- **January 1993 - Reply comments received**
 - **TIA and Joint Commenters maintain position**

WHY 1.6 MHZ RF CHANNELS?



Alcatel's Plan Uses FCC's Most Spectrally Efficient Requirements

PART 21.122 MICROWAVE DIGITAL MODULATION

- 21.122 (a)(2) - - Equipment to be used for voice transmission shall be capable of satisfactory operation within the authorized bandwidth to encode at least the following number of voice channels:

PER TO B173.117

Evolution of 1.6 MHz RF Channels Minimum Channel Bandwidth Calculation

21.122(a)(3) "N" Factor	Authorized Bandwidth (MHz) at			Required Min. Number of Voice Channels	Equivalent Number of DS1 Circuits
	4 GHz	6 GHz	11 GHz		
1	20	30	40	1152	48
2	10	15	20	576	24
3	6.67	10	13.33	384	16
4	5	7.5	10	288	12
6	3.33	5	6.67	192	8
12	1.67	2.5	3.33	96	4
24	0.83	1.25	1.67	48	2
48	0.42	0.63	0.83	24	1

Commonly used modulation techniques
 to meet this requirement:

- 8 PSK, 16 QAM
- 16 QAM, 25 QPR
- 64 QAM, 49 QPR

WHY 1.6 MHZ RF CHANNELS

- 55% of existing 2 GHz frequencies carry 96 channels or less
- Most efficient EXISTING rule standard requires 96 channel capacity in 1.6 MHz
- All major microwave manufacturers CURRENTLY provide radios using 64 QAM or 49 QPR or more efficient modulation techniques
- 96 channel (4 DS1) are typical increments in the North American standard digital transmission hierarchy
- 4, 8, 12 DS1 capacities are common user transmission capacities
- 1.6 MHz RF channels meet these requirements

Manufacturing Industry Consensus

- Minimum path length requirements
- Antenna characteristics
- Power limitations
- Emission and bandwidth limitations
- Frequency diversity transmission
- Prior Coordination
- ATPC
- NTIA discussions

Alcatel's Modified Plan

- 1.6 MHz based frequency plan creates more transmission capacity in existing frequency bands
 - achieves same capacity as JC 2.5 MHz plan with less spectrum
 - achieves same efficiency as **existing** FCC standards
 - Efficiently accommodates low capacity users
 - Two year spectrum efficiency transition period
 - frequency plan becomes effective immediately
 - **Does not favor any single manufacturer**
-
-
-
-
-

Joint Commenters' Channelization Proposals

- Revised 1.25 MHz based channelization plan
- Substantial [user] justification for assignment of wideband channels (15 MHz and greater)
- Phasing-in of new efficiency standards for digital microwave equipment
- Adoption of Part 94 (Private) interference protection criteria and Part 21 (Common Carrier) coordination procedures
- No formalization of reserving growth channels

(JC/4/1)



Joint Commenters' Claims About Their Channel Plan

The proposed changes claimed to:

- Provide sufficient wideband and narrowband channels to meet the needs of displaced 2 GHz users
- Maximize spectrum efficiency without unnecessarily increasing equipment costs
- Promote competition in the equipment manufacturing industry
- Maximize spectrum utilization
- Maximize the orderly migration of displaced 2 GHz band users
- Minimize adverse impact to new and existing licensees

(JC/4/1) (JR/14/3)

Joint Commenters' Criticize Alcatel Modified Plan

- It favors one manufacturer
- Does not correspond to 2 GHz users' needs/expectations
- Creates remnants
- Sacrifices path reliability
- Increases equipment costs
- 400/800 kHz channels not economical or practical



Alcatel's Modified Plan Does Not Favor One Manufacturer

- Alcatel's Modified Plan uses today's most spectrally efficient FCC rules
- All major microwave manufacturers have appropriate modem technology for easy and inexpensive adaption to Alcatel's Modified Plan
- All major microwave manufacturers have product or can readily adapt product consistent with Alcatel's Modified Plan



Alcatel's Modified Plan Uses Efficient, Well-tested, Existing Technologies

Technologies Involved

8 PSK

16 QAM, 25 QPR*

64 QAM, 49 QPR**

128/256 QAM

512 QAM, 128 TCM

* JC's Proposal

16 Year Old Technology

12 Year Old Technology

8 Year Old Technology

4 Year Old Technology

State of the Art

** Alcatel's Proposal